

WHAT IS CLAIMED IS AS FOLLOWS:

1. A switching module for electronic signal transmission comprising:
 - a first side with a plurality of connectors including a first group of three connectors and a second group of three connectors;
 - a second side with a plurality of connectors, including a first jack and a second jack, each jack having a spring contact tip conductor, a second tip conductor, a spring contact ring conductor, a second ring conductor and a shield conductor with a normal closed connection between the spring contact and second tip conductors and a normal closed connection between the spring contact and second ring conductors, each jack configured such that insertion of a plug opens the normal closed connections and electronically connects the tip of the plug to the spring contact tip conductor, the ring of the plug to the spring contact ring conductor, and the shield of the plug to the shield conductor;
 - a first plurality of circuits connecting the shield conductor of each jack with a connector within each group of first side connectors;
 - a plurality of two position switches having an open position and a closed position; and
 - a second plurality of circuits, each including one of the two position switches, one of the circuits linking the spring contact tip conductor of the first jack with the second tip conductor of the second jack, another of the circuits linking the spring contact ring conductor of the first jack with the second ring conductor of the second jack, another of the circuits linking the second tip conductor of the first jack with the second ring conductor of the first jack, and another of the circuits linking the second ring conductor of the first jack with the second ring conductor of the second jack.
2. The switching module of claim 1, wherein the first side connectors are card edge connectors.

3. The switching module of claim 1, wherein the two position switches are sliding switches.

4. The switching module of claim 1, wherein the plurality of first side connectors includes a third group of three connectors and a fourth group of three connectors, and the plurality of second side connectors includes a third jack and a fourth jack, the third and fourth groups of first side connectors and the third and fourth jacks being connected to each other in the same manner that the first and second groups of first side connectors and the first and second jacks are connected with each other.

5. The switching module of claim 1, wherein the module includes designation lenses, the second side connectors being accessible through an outer surface of the module, the outer surface having mounting slots located adjacent to the connectors, the outer surface of the module having a width, each lens comprising:

- a first side and an opposing, spaced apart second side;

- a first end and an opposing, spaced apart second end;

- a front face and a rear face extending from the first side to the second side and from the first end to the second end;

- a first rear wall and a second rear wall extending rearward from the rear face along the first and second sides, respectively, and defining first and second rear mounting flats, respectively;

- mounting tabs extending rearward from the rear mounting flats;

- the rear face, the first and second rear walls of each lens, and outer surface of the module cooperating to define a space for receiving an indicia related to the adjacent connector;

- the lenses each being formed of a transparent material to allow the indicia within the space to be seen through the lenses;

- the lenses each being sized so that when mounted to the outer surface the lenses are approximately the same width as the outer surface.

6. The switching module of claim 1, wherein the circuitry including the two position switches which connect each jack pair with two groups of first side connectors can be configured in three switching states:

- (a) all of the switches being open;
- (b) the switch in the circuit connecting the spring contact tip conductor of the first jack with the second tip conductor of the second jack, and the switch in the circuit connecting the spring contact ring conductor of the first jack with the second ring conductor of the second jack being closed and the remainder of the switches being open; and
- (c) the switch in the circuit connecting the second tip conductor of the first jack with the second tip conductor of the second jack, and the switch in the circuit connecting the second ring conductor of the first jack with the second ring conductor of the second jack being closed and the remainder of the switches being open.

7. The switching module of claim 1, wherein the first side connectors include a common ground connection and the plurality of circuits including two position switches connect the shield conductor of each jack with the common ground connector on the first side.

8. The signal module of claim 1, wherein the plurality of circuits includes a circuit board extending in a first direction between a first face of the switching module and a second face of the switching module, the first side connectors located at the first face of the switching module, the second side connectors located at the second face of the connecting module, and the two position switches positioned on the circuit board.

9. A method of configuring an electronic signal transmission circuit, comprising:
providing a switching module for electronic signal transmission
comprising:

a first side with a plurality of connectors including a first group of three connectors and a second group of three connectors;

a second side with an even number of connectors grouped into pairs, each pair of connectors including a first jack and a second jack, each jack having a spring contact tip conductor, a second tip conductor, a spring contact ring conductor, a second ring conductor and a shield conductor with a normal closed connection between the spring contact and second tip conductors and a normal closed connection between the spring contact and second ring conductors, each jack configured such that insertion of a plug opens the normal closed connections and electronically connects the tip of the plug to the spring contact tip conductor, the ring of the plug to the spring contact ring conductor, and the shield of the plug to the shield conductor;

a plurality of two position switches having an open position and a closed position; and

a plurality of circuits, each including one of the two position switches, one of the circuits linking the spring contact tip conductor of the first jack with the second tip conductor of the second jack, another of the circuits linking the spring contact ring conductor of the first jack with the second ring conductor of the second jack, another of the circuits linking the second tip conductor of the first jack with the second tip conductor of the second jack, and another of the circuits linking the second ring conductor of the first jack with the second ring conductor of the second jack.

placing all the two position switches into an open condition so that each connector on the first side is connected directly with a conductor within a jack on the second side.

10. The method of claim 9, wherein the two position switch in the circuit connecting the second tip conductor of the first jack in a pair with the second tip conductor of the second jack in the pair is closed, and the two position switch in the circuit connecting the second ring conductor of the first jack in the pair and the second ring conductor of the second jack in the pair is closed.

11. The method of claim 9, wherein the two position switch in the circuit connecting the spring contact tip conductor of the first jack in a pair with the second tip conductor of the second jack in the pair is closed, and the two position switch in the circuit connecting the spring contact ring conductor of the first jack of the pair with the second ring conductor of the second jack of the pair is closed.

12. The method of claim 9, wherein the two position switch in the circuit connecting the shield conductor of a jack with the ground connector on the first side is closed.

13. The method of claim 9, further comprising the steps of:

- inserting the switching module into a chassis;
- subsequently removing the switching module from the chassis;
- switching at least one of the two position switches in the removed switching module; and
- reinserting the switching module into the chassis.

14. An electronic signal transmission system comprising:

- (a) a switching module for signal transmission including:
 - (1) a first side with a plurality of connectors including a first group of three connectors and a second group of three;
 - (2) a second side with an even number of connectors grouped into pairs, each pair of connectors including a first jack and a second jack, each jack having a spring contact tip conductor, a second tip conductor, a spring contact ring conductor, a second ring conductor and a shield conductor with a normal closed connection between the spring contact and second tip conductors and a normal closed connection between the spring contact and second ring conductors, each jack configured such that insertion of an plug opens the normal closed connections and electronically connects the tip of the plug to the spring contact tip conductor, the ring of the plug to the spring contact ring conductor, and the shield of the plug to the shield conductor;

(3) a plurality of two position switches having an open position and a closed position; and

(4) a plurality of circuits, each including one of the two position switches, one of the circuits linking the spring contact tip conductor of the first jack with the second tip conductor of the second jack, another of the circuits linking the spring contact ring conductor of the first jack with the second ring conductor of the second jack, another of the circuits linking the second tip conductor of the first jack with the second tip conductor of the second jack, and another of the circuits linking the second ring conductor of the first jack with the second ring conductor of the second jack

(b) a connecting module including:

(1) a plurality of first side connectors which electronically link to the first side connectors of the switching module;

(2) a second side with a plurality of connectors for attaching to a plurality of cables; and

(3) a plurality of circuits electronically linking the first side connectors of the connecting module to the second side connectors of the connector module;

(c) a chassis holding the switching module and the connecting module adjacent to one another, wherein each first side connector of the switching module is electronically connected to a first side connector of the connecting module.

15. The electronic signal transmission system of claim 14, wherein the first side connectors of the switching module are card edge connectors and the first side connectors of the connection module are mounted in a slot adapted to interface with and electronically link with the first side connectors of the switching module.

16. The electronic signal transmission system of claim 14, wherein a plurality of switching modules may be connected to the connecting module.

17. The electronic signal transmission system of claim 16, wherein the chassis holds a plurality of connecting modules and a plurality of switching modules may be connected to each connecting module.

18. The electronic signal transmission system of claim 16, wherein designation lenses for receiving indicia are located on the second side of the switching modules adjacent to each jack.

19. The electronic signal transmission system of claim 14, wherein the plurality of circuits includes a circuit board extending in a first direction between a first face of the switching module and a second face of the switching module, the first side connectors located at the first face of the switching module, the second side connectors located at the second face of the connecting module, and the two position switches positioned on the circuit board.

20. An electronic signal transmission module comprising:

- a front defining an even number of jacks paired together, each jack including tip ring and shield contact springs;

- a rear with card edge connectors;

- a circuit board with a first plurality of circuits electronically connecting the jack contact springs with the card edge connectors; and

- a second plurality of circuits including a plurality of two position switches mounted on the circuit board which are electronically linked to the first plurality of circuits, the second plurality of circuits connecting the tip and ring contact springs of each jack pair.

21. The electronic signal transmission module of claim 20, wherein designation lenses for receiving indicia are located on the front adjacent to each jack.

22. A designation lens for use with an electronic switching module having a connector, the connector being accessible on or through an outer surface of the connection module and the outer surface having mounting slots located adjacent to the connector, the outer surface of the module having a width, the lens comprising:

a first side and an opposing, spaced apart second side;

a first end and an opposing, spaced apart second end;

a front face and a rear face extending from the first side to the second side and from the first end to the second end;

a first rear wall and a second rear wall extending rearward from the rear face along the first and second sides, respectively, and defining first and second rear mounting flats, respectively;

mounting tabs extending rearward from the rear mounting flats;

the rear face, the first and second rear walls, and outer surface of the module cooperating to define a space for receiving an indicia related to the switching connector;

the lens being formed of a transparent material to allow the indicia within the space to be seen through the lens;

the lens being sized so that when mounted to the surface it is approximately the same width as the outer surface.

23. The designation lens of claim 22, wherein the front face is convex with regard to the surface of the electronic connection module along a radius of curvature so that the lens provides positive magnification of the indicia.

24. The designation lens of claim 22, wherein the width of the outer surface of the electronic connection module is approximately 0.5 inches.

25. ~~A~~ switching module comprising:

a module body having a first side, a second side, and a circuit board extending from adjacent the first side toward the second side;

first and second connectors located at the first side for connecting to first and second cables; ,

first and second connector locations at the second side for connecting to a first signal transmission member and a second signal transmission member, respectively;

movable two position switches on the circuit board for selectively connecting the first and second connectors of the first side.

26. The switching module of claim 25, wherein the connectors include tip, ring and ground connections.

27. The switching module of claim 25, further comprising third and fourth connectors located at the first side, and third and fourth connector locations at the second side.

28. The switching module of claim 27, wherein the connectors include tip, ring and ground connections.

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